Attachment A

RESPONSIVENESS SUMMARY
DRAFT PROPOSED ACTION MEMORANDUM
FOR THE
SOURCE REMOVAL AT TRENCH 1, IHSS 108

Comment #1 This proposed action is unique due to the fact that the source to be removed is depleted uranium in drums The pyrophoric nature of the depleted uranium is mentioned several times in the document, but it is not discussed in any detail A short discussion of this property of DU should be included so that the reader has a reasonable understanding o fit In addition, the potential of a fire occurring due to this action should also be discussed in the document Finally, safety measures that will be taken to prevent and/or extinguish a fire need to be presented in more detail

Response #1 *New Subsection 2 2 1 "Physical Characteristics of Depleted Uranium" was written and added to the PAM*

Comment #2 The potential hazard of an explosion due to possible hydrogen build-up in the drums also needs to be explained and evaluated in this document A brief discussion of the safety measures that are being planned to control this hazard also needs to be included

Response #2 *New Subsection 2 2 1 "Physical Characteristics of Depleted Uranium" was written and added to the PAM*

Comment #3 The last paragraph in Section 3 3 briefly mentions radiological screening to detect surface contamination and airborne radioactivity A more detailed presentation of these activities is needed, i e when, where, and what instruments will be used?

Response #3 *These activities will be detailed in the Health and Safety Plan being developed for the project Additionally, radiological screening and surface contamination surveys are conducted in accordance with the project specific Radiological Work Permit (RWP) issued for the work*

Comment #4 An estimate of the amount of uranium that is likely to be present in the trench should be provided, in terms of weight (kilograms) and of radioactivity (curies)

Response #4 *The PAM will be revised (section 2 2) to include an estimate of the quantity (by weight) of depleted uranium expected in Trench 1 (10,000-20,000 kilograms) It is however, difficult to estimate the trench contents in terms of radioactivity (curies) due to the unknown nature of the depleted uranium and the alloyed material composition*

Comment #5. In the unlikely event that significant contaminated groundwater is encountered or sampling indicates that such a potential exists, it will be necessary to install one or more performance monitoring wells This contingency needs to be written into the PAM

Response #5 *Section 3 2 has been revised to include this concern as a contingency, as follow, "If significant VOC-contaminated groundwater is identified during the project, post-closure groundwater monitoring may be required Details of a proposed groundwater monitoring program would be described in the project Closeout Report"*

Comment #6 On page 21 of the PAM, section 3 2 3 indicates that "stabilization techniques can be sensitive to oils or solvents" Do you anticipate oils and/or solvents? What disposal sites are you considering?

Response #6 *The oils that were typically used in the machining process were water and mineral oil based The segregation process will include a step for separation of these liquids, if present We are presently evaluating both NTS and Envirocare as potential disposal sites No changes to the PAM are required*

Comment #7 How much soil is necessary to warrant the need for VOC-treatment (thermal desorption) of VOC-contaminated soils? Do you anticipate using level B PPE for the project?

Response #7 *This decision is based on a cost-benefit analysis which will be determined during the course of the project We are presently evaluating the VOC treatment costs and capabilities of Envirocare Yes, level B PPE is anticipated due to the potential of VOC-contamination within the trench No changes required*

Comment #8· In Section 3 3, please provide some additional detail in the paragraph on air monitoring

Response #8 *Section 3 3 will be revised to include additional detail on air monitoring for the project*

Comment #9 How much DU is buried within trench 1? Please provide an estimated quantity in the PAM

Response #9 *The estimated quantity of DU in trench 1 is 10 000 to 20 000 kgs This information will be added to the PAM*

Comment #10 Explain, Is the cyanide waste a listed waste?

Response #10 *No due the unknown origin of the cyanide waste (listed electroplating sources or non-listed heat treating sources) it will be considered potentially reactive until tested and determined otherwise No change required*

Comment #11 In Section 1 0, the statement is made that, "T-1 received a high ranking because it is the largest known source of radioactive contaminants buried at the Rocky Flats Environmental Technology Site"
Please indicate whether this determination is by material mass or by activity

Response #11 *Section 1 0 has been revised to, "T-1 received a high ranking because it is the largest known ~~source~~ volume of radioactive contaminants buried at the Rocky Flats Environmental Technology Site"*

Comment #12 Since the public is unfamiliar with 10 CFR 835, please state its title in the last paragraph of Section 2 2 on page 6

Response #12 *Done*

Comment #13 The minimum depth to the water table appears to be contradictory in the second paragraph of Section 2 3 It is variously described as "approximately 10 feet below ground surface", "up to approximately 6 feet below ground surface", and reaches the level of the drums in the trench"

Response #13 *The text in the second paragraph describes the average seasonal range of depth of groundwater as well as the minimum depth to groundwater measured in the vicinity of the site In the second paragraph of Section 2 3 the text states that groundwater " seasonally ranges in depth from approximately 10 feet below ground surface to below the contact between the underlying Arapahoe Formation and the Rocky Flats Alluvium " The contact between the Arapahoe Formation and the Rocky Flats Alluvium is from approximately 12 feet to 22 feet below ground surface in the vicinity of the trench (as stated in the first paragraph of Section 2 3) Therefore, the text is indicating that groundwater beneath the trench site ranges from approximately 10 to 21 below ground surface*

The text also states that " the depth to groundwater can fluctuate up to approximately 6 feet below ground surface " This statement is based on groundwater measurements made in May 1995 during the wettest spring in 25 years

Section 2 3 has been revised for clarification

The locations of boreholes and wells used to characterize the T-1 area are presented in Figure 2-1 ***Groundwater in the vicinity of the T-1 site seasonally ranges in depth from approximately 10 feet to 22 feet below ground surface In May 1995, during the wettest spring in 25 years, groundwater was measured at approximately 6 feet below ground surface The bottom of the trench has been estimated to be about 10 feet below ground surface As such, groundwater occasionally reaches the level of the drums in the trench***

Comment #14. The second paragraph in Section 2 3 states that, "the water table occasionally reaches the level of drums in the trench" Indicating that T-1 is a potential source of groundwater contamination The conclusion in Section 2 4 1 that, "there does not appear to be significant subsurface soil or groundwater contamination with a source in T-1" is based on "limited data" None of the wells in the vicinity of T-1 is adequate to assess groundwater contamination form the trench and therefore none is adequate as a performance monitoring well Four of the five are up-gradient or cross-gradient The only downgradient well, #1791, is 45 feet away and is screened in the weathered claystone bedrock If, during the excavation, indications of potential groundwater contamination are discovered, monitoring of downgradient groundwater must be performed This potential for performance monitoring must be described in this decision document Wells should be screened in the weathered bedrock and in any Arapahoe sandstone that may be present If no VOC or radiological contamination is found in these wells, no further monitoring would be necessary

Response #14 *Section 3 2 has been revised to include the potential of future groundwater monitoring as a contingency Details of any groundwater monitoring program would be described in the project Closeout Report*

Comment #15· The discussion in Section 2 4 2 under Metals in Soils and Radionuclides in Soils (page 11) needs to state that the boreholes are all well outside the trench and explain how the analytical results are applicable to this proposed action The location of the boreholes makes the data listed in Table 2-2 almost irrelevant This same comment applies to the discussion under Soil Gas Survey on page 13

Response #15 *The borehole data is presented to evaluate all available data for the trench area as stated in the first paragraph of Section 2 4 However, Section 2 4 2 will be clarified as follows*

Subsurface soil samples were collected from three boreholes (BH3487, BH3587, and BH3687) in the vicinity of T-1 (see Figure 2-1) ***The boreholes are located well outside of the trench area Subsequently, the available borehole data does not represent subsurface conditions within the trench*** *Subsurface soil sampling from cobble material encountered*

In addition, the text in the last paragraph of Section 2 4 will be changed as follows

Due to the limited ***number of borehole and monitoring well locations in the vicinity of the trench*** *the available data are not sufficient to state conclusively that T-1 is contributing to subsurface soil and groundwater contamination in the T-1 area Based on review of this limited available data with a source in T-1*

The discussion under Soil Gas Survey states that the survey results were used as a screening method for volatile organic compounds and that no samples were collected within the trench boundaries due to the potential hazards associated with the trench Again, the soil gas survey data is presented to evaluate all available data for the trench area

Comment #16 Also explain in Section 2 4 2 why Ra-226 concentrations are not presented There is a national standard for Ra-226 in soils since this radionuclide presents distinct hazards in terms of gamma emissions from its Bi-214 daughter and its Ra-222 emanation U-238/234 may decay to radium concentrations which may exceed the standard Why has radium not been analyzed for?

Response #16 *In accordance with RFCA, the parent radionuclide is considered The action levels per RESRAD (residual radioactivity) considers all daughters and the individual dose contributions of each*

Comment #17 The statement in Section 2 4 2 under Metals in Soil (page 11) concerning Tier I and Tier II action levels "in subsurface soils for open space use" should be clarified Exposure to subsurface soil is not evaluated for open space users This confusion is a result of using surface soil action levels for subsurface soil action levels, which was done because of difficulties in determining the mobility of metals in soils Using the phrase "in subsurface soils in the proposed open space area" is proposed

Response #17 *The text will be revised as follows*

This concentration is below both Tier I and Tier II action levels for cadmium in subsurface soils in the proposed open space area Arsenic was detected at 14 mg/kg in borehole BH3587 at a depth of 18 to 19 feet These concentrations are below Tier I and above Tier II action levels for arsenic in subsurface soils in the proposed open space area

Comment #18 The Radionuclides in Soil part of Section 2 4 2 explains that the analysis of soil samples will determine the extent of excavation Explain how the time required for these analyses will affect the progress of excavation

Response #18 *Soil samples will be collected following removal of all trench (as discussed in Section 3 2 1) contents to confirm that all contaminated soils have been removed from the trench The trench will be backfilled as excavation progresses Therefore the progress of excavation will not be dependent upon the soil analytical results as stated The last sentence in Section 2 4 2 under Radionuclides in Soils will be changed as follows*

Confirmation soil samples will be collected to determine the extent of excavation

Comment #19 Section 3 0 mentions a multi-stage process to segregate the various materials excavated from the trench A description of how these materials will be separated should be included The second sentence in Section 3 2 seems to indicate that no separation of chips and contaminated soil will occur and that these materials will be cemented together

Response #19 *This process is detailed in Section 3 2 2 Many details of this process remain to be finalized The final details will be described in the Field Implementation Plan*

Comment #20 Please modify the fifth sentence of the first paragraph in Section 3 0 to read, "The project will be conducted in accordance with **applicable regulations (see Section 5 0)**, the RFCA guidelines, "

Response #20 *Done*

Comment #21 The text in Section 3 2 is unclear as to what will be done with the VOC-contaminated soils above Tier I action levels if sufficient volume is not present to warrant treatment using thermal desorption This comment also applies to the last paragraph in Section 3 2 3

Response #21 *Section 3 2 has been modified to clarify this point*

Comment #22 The second paragraph of Section 3 2 1 states that Field Operations Procedure FO 1 "will be incorporated into the project " In what document will these and/or other air monitoring procedures be established and described? The public, the surrounding cities in particular, has expressed great interest in air monitoring methods, and so these should be briefly described in this public document This section should also mention what techniques will be used to assure abatement of any fugitive particulate emissions from the open portion of the trench and other disturbed areas during down times and after excavation is completed A discussion of radiological monitoring should include which instruments will be used and what levels will trigger a response It should also be explained how the presence of plutonium will be determined A separate subsection within Section 3 could be devoted to the subject of monitoring

Response #22 *Section 3 2 1 has been modified for clarification However, use and types of field instrumentation and monitoring is designated in the Project specific Health and Safety Plan, and Radiological Work Permits*

Comment #23 The sixth paragraph in Section 3 2 1 (page 17) states that Tier I soil action levels were designated as Cleanup Target Levels in order "to prevent degradation of groundwater quality above the RFCA Tier I groundwater action levels " Because this decision would allow soils contaminated above Tier II action levels to be put back into the trench, the provisions of RFCA Attachment 5, Paragraph 4 2 B would apply The Tier II subsurface action level is narrative and essentially says that subsurface soils cannot contribute contaminants to groundwater at levels which will impact surface water quality This section must address protection of surface water via groundwater In order to assure protection of surface water, additional groundwater data must be available

This paragraph also describes the potential contaminants of concern listed in Table 3-1 Because the entire contents of the trench are unknown and historical information is conflicting, this paragraph should state that additional COCs may be identified during excavation and that the cleanup levels for any additional contaminants will be equal to Tier I subsurface soil action levels

Response #23 *If significant groundwater contamination is identified during excavation post closure groundwater monitoring may be required Post closure monitoring will be addressed in the Project Closeout Report See revisions to second paragraph in Section 3 2 and Section 3 2 1 sixth paragraph*

Comment #24 In the seventh paragraph of Section 3 2 1 (page 18) a three-times-background radioactivity level is proposed to determine if soils are to be further sampled How was this level established, what are the resulting values, and how do they compare with subsurface soil action levels?

Response #24 *This is a field screening tool that has been developed to demonstrate levels below Tier II This method will be utilized as a field screen only to be confirmed utilizing standard lab analytical methods*

Comment #25 Will special handling of the cyanide wastes be required to protect the workers? If so, these procedures should be mentioned in Section 3 2 2

Response #25 *Yes, level B PPE is anticipated at this time Details on monitoring for and special handling will be addressed in the Health and Safety Plan*

Comment #26 The Temporary Unit mentioned in the fourth paragraph of Section 3 2 2 should be described Will this TU be in the open or in an enclosed structure?

Response #26 *Refer to Section 5 2 6*

Comment #27 The next-to-last paragraph in Section 3 2 2 states that collected storm water will be used for control of fugitive particulates Will there be an additional supply of water immediately available at the project for periods of no precipitation or when the water must be treated at Building 891?

Response #27 *Yes, a domestic supply of water will also be available for use as "dust" control*

Comment #28 Section 3 2 3 (page 21) mentions that the presence of oils or solvents may be addressed through a separation process This separation process should be described

Response #28 *Details of the separation process require further development However it will most likely only require gravity separation, Section 3 2 3 will be revised as follows*

*If these materials are detected, the stabilization mixture may be modified or the oils/solvents may be separated and containerized (**eg gravity separation, or filtration**)*

Comment #29 The last paragraph of Section 3 2 3 should explain how the potential presence of depleted uranium in the contaminated soil might affect the thermal desorption process

Response #29 *The project screening process will segregate out depleted uranium chips and turnings (see Section 3 2 2) Soils containing trace depleted uranium contamination will not effect the thermal desorption process Depleted uranium contaminated equipment will be decontaminated and surveyed prior to release from the site*

Comment #30 Section 5 1 2 states that the RFCA Action Levels Framework was "considered" when establishing cleanup levels This agreement is a RCRA Consent Order and is certainly applicable to this cleanup activity

Response #30 *The RFCA ALF are not duly promulgated requirements, and therefore cannot be ARAR*

Comment #31 Because the public may not understand when DOE's fiscal year begins, include "(October 1997)" at the end of the first sentence in Section 6 0

Response #31 *Done*

Comment #32 There are several areas of this proposed action which are currently undetermined and are therefore only vaguely described in this document (e g , contents of much of the trench and the degree of contamination beneath it, the specific "stabilization process", compatibility of unknown contaminants and concentrations with the cementation processes, total quantities requiring treatment, some details in the handling procedures, specifications of the containment structure, etc) As more information about these areas becomes known, the agencies need to be informed by means of briefings, additional submittals, or even modifications to this PAM, if necessary Other details which do not need to be included in this PAM, but which should be provided to the agencies to help in the evaluation of this proposed action include details of DU pyrophoricity, possibility of airborne releases during potential fires, etc

Response #32 *Noted*